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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/828,067
Filing Date: April 06, 2001
Appellant(s): CURRY ET AL.

Michael A. Bernadicou
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed November 19, 2007 appealing from the Office action mailed May 14, 2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

GROUNDS OF REJECTION NOT ON REVIEW

The following grounds of rejection have not been withdrawn by the examiner, but they are not under review on appeal because they have not been presented for review in the appellant's brief:

Claims 30, 31, 33, 34, 43-46, 48-52, and 54-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itsudo et al (Itsudo; JP05-198512) in view of Sivaramakrishnam et al. (Sivaramakrishnam; US 5,531,183 A).

Claims 32, 35, 38, 39, and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itsudo et al (Itsudo; JP05-198512) and Sivaramakrishnam et al. (Sivaramakrishnam; US 5,531,183 A) in view of Nguyen (US 6,444,039 B1).

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

JP 05198512 A	ITSUDO et al.	8-1993
US 5531183 A	SIVARAMAKRISHNAM et al.	7-1996
US 6444039 B1	NGUYEN	9-2002

(9) Grounds of Rejection

The following grounds of rejection are applicable to the appealed claims:

Claims 29, 42, and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itsudo et al (Itsudo; JP05-198512) in view of Sivaramakrishnam et al. (Sivaramakrishnam; US 5,531,183 A).

Itsudo teaches:

i. A wafer (2; Figure 6) processing apparatus (Figure 6, 8; abstract), comprising: a processing chamber (1; Figure 6; abstract) defined by a lower wall, an upper wall (8; Figure 6) and side walls extending from the lower wall to the upper wall (8; Figure 6), a wafer (2; Figure 6) supply opening (not shown; inherent) being formed in one of the walls for transferring a wafer (2; Figure 6) into the processing chamber (1; Figure 6; abstract); a susceptor (6; Figure 1) in the processing chamber (1; Figure 6; abstract) on which the wafer (2; Figure 6) can be located so that an upper surface of the wafer (2; Figure 6) faces the upper wall (8; Figure 6); a manifold (9; Figure 6) component located

on the processing chamber (1; Figure 6; abstract) and, together with the upper surface of the upper wall (8; Figure 6), defining a manifold cavity (9; Figure 6); an exhaust line (4; Figure 6) connected to the processing chamber (1; Figure 6; abstract), for flowing a gas from the processing chamber (1; Figure 6; abstract), connected such that the gas has a tendency to flow toward the exhaust line (4; Figure 6); and a processing gas supply line (12; Figure 6) connected to the manifold (9; Figure 6) component for providing a processing gas into the manifold cavity (9; Figure 6) wherein the processing gas comprises reactive gases used for processing the wafer – Claim 29. Appellant's claim requirement of gas identity, is an intended use claim requirement of the ending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

ii. wherein the upper wall (8; Figure 6) of the processing chamber (1; Figure 6; abstract) comprises a plurality of processing gas supply openings (10; Figure 6, 8), each of the processing gas supply openings (10; Figure 6, 8) provide an intake opening (top surface of 8 at entrance of 10; Figure 6; abstract) into an upper surface of the upper wall (8; Figure 6) and an exhaust opening (bottom surface of 8 at exit of 10; Figure 6; abstract)

out of a lower surface of the upper wall (8; Figure 6) to provide a pathway for flowing processing gas from the manifold cavity (9; Figure 6) into the intake openings (top surface of 8 at entrance of 10; Figure 6; abstract) and out of the exhaust openings (bottom surface of 8 at exit of 10; Figure 6; abstract) of the processing gas openings (10; Figure 6, 8) in the upper wall (8; Figure 6), and into the processing chamber (1; Figure 6; abstract), the processing gas supply openings (10; Figure 6, 8) being nonuniformly (Figure 8) distributed over the upper wall (8; Figure 6) to create a flow pattern comprising a predominantly vertical flow of processing gas onto the wafer, as claimed by Claim 29 – When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

iii. A wafer (2; Figure 6) (2; Figure 6) processing apparatus (Figure 6, 8; abstract), comprising: a processing chamber (1; Figure 6; abstract) defined by a lower wall, an upper wall (8; Figure 6) and side walls extending from the lower wall to the upper wall (8; Figure 6); a susceptor (6; Figure 1) in the processing chamber (1; Figure 6; abstract) on which the wafer (2; Figure 6) can be located so that an upper surface of the wafer (2; Figure 6) faces the upper wall (8; Figure 6); a manifold (9; Figure 6) component located on the processing chamber (1; Figure 6; abstract) and, together with the upper surface of the upper wall (8; Figure 6), defining a manifold cavity (9; Figure 6); an exhaust system comprising an exhaust line (4; Figure 6) connected to the processing chamber (1; Figure 6; abstract), for flowing an exhaust gas from the processing chamber (1; Figure 6; abstract); a processing gas supply line (12; Figure 6) connected to the manifold (9; Figure

6) component; a plurality of processing gas supply openings (10; Figure 6, 8) distributed non-uniformly in the upper wall (8; Figure 6) providing a means for supplying a processing gas from the manifold cavity (9; Figure 6) to the processing chamber (1; Figure 6; abstract), wherein the processing gas comprises non-depleted reactive gases used for processing the wafer (2; Figure 6), wherein the exhaust gas comprises reacted gases and depleted processing gas, wherein the processing gas supply openings (10; Figure 6, 8) may be non-uniformly distributed over the upper wall (8; Figure 6), wherein the processing gas supply openings (10; Figure 6, 8), the manifold cavity (9; Figure 6) and component, processing gas supply, and exhaust system predominantly determine the flow pattern of processing gas onto the upper surface of the wafer (2; Figure 6), as claimed by Claim 42

iv. A wafer (2; Figure 6) (2; Figure 6) processing apparatus (Figure 6, 8; abstract), comprising: a processing chamber (1; Figure 6; abstract) defined by a lower wall, an upper wall (8; Figure 6) and side walls extending from the lower wall to the upper wall (8; Figure 6); a susceptor (6; Figure 1) in the processing chamber (1; Figure 6; abstract) on which the wafer (2; Figure 6) can be located so that an upper surface of the wafer (2; Figure 6) faces the upper wall (8; Figure 6); a manifold (9; Figure 6) component located on the processing chamber (1; Figure 6; abstract) and, together with the upper surface of the upper wall (8; Figure 6), defining a manifold cavity (9; Figure 6); a processing gas supply line (12; Figure 6) connected to the manifold (9; Figure 6) component; a plurality of processing gas supply openings (10; Figure 6, 8) in the upper wall (8; Figure 6), wherein a processing gas from the manifold cavity (9; Figure 6) passes into the

processing chamber (1; Figure 6; abstract), wherein the processing gas comprises reactive gases used for processing the wafer (2; Figure 6), wherein the processing gas supply openings (10; Figure 6, 8) are non-uniformly distributed over the upper wall (8; Figure 6), and an exhaust system comprising an exhaust line (4; Figure 6) connected to the processing chamber (1; Figure 6; abstract), for flowing an exhaust gas from the processing chamber (1; Figure 6; abstract), wherein the exhaust gas comprises reacted gases and depleted processing gas, as claimed by Claim 47

Itsudo does not teach a gas supply line connected via a processing gas supply line opening formed through an upper surface of the manifold cavity.

Sivaramakrishnam teaches a gas supply (40,60,80; Figure 2) connected via a processing gas supply line opening formed through an upper surface (top of 10) of a manifold cavity (38).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Sivaramakrishnam's gas supplies and for Itsudo et al's to optimize the relative location of his processing gas supply line opening.

Motivation to add Sivaramakrishnam's gas supplies and for Itsudo's to optimize the relative location of his processing gas supply line opening is to use process gas sources as precursors for operations and to optimize desired process gas flows as taught by Itsudo (abstract). It is well established that the rearrangement of parts is considered obvious to those of ordinary skill (In re Japikse , 181 F.2d 1019, 86 USPQ 70 (CCPA 1950); In re Kuhle , 526 F.2d 553, 188 USPQ 7 (CCPA 1975); Ex parte Chicago Rawhide Manufacturing Co. , 223 USPQ 351, 353 (Bd. Pat. App. & Inter. 1984); MPEP 2144.04)

Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Itsudo et al (Itsudo; JP05-198512) and Sivaramakrishnam et al. (Sivaramakrishnan; US 5,531,183 A) in view of Nguyen (US 6,444,039 B1). Itsudo and Sivaramakrishnam are discussed above.

Itsudo and Sivaramakrishnam do not teach:

i. Itsudo's apparatus (Figure 6, 8; abstract) of Claim 29 wherein Itsudo's processing gas in the manifold cavity (9; Figure 6) comprises non-depleted reactive gases used for processing the wafer, as claimed by Claim 40 – However, gas identity is not considered a structural limitation in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

Nguyen teaches a portion (vertical part) of a gas distribution plate (111; Figure 10) including injection holes (117, Figure 10) with Appellant's claimed angular displacement as per Appellant's Figures 4, 5.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to angle Itsudo's processing gas supply openings (10; Figure 6, 8) as taught by Nguyen, further to process the wafer under laminar flow including optimized hole distributions as taught by Itsudo.

Motivation to angle Itsudo's processing gas supply openings (10; Figure 6, 8) as taught by Nguyen, further to process the wafer under laminar flow including optimized hole distributions as taught by Itsudo is for influencing flow patterns of Itsudo's process gases to achieve controlled CVD film thickness distributions as taught by Itsudo et al (abstract).

(10) Response to Argument

Appellamt's arguments center on the independently claimed limitations of "processing gas supply line connected to the manifold…, the processing gas supply line connected via a processing gas supply line opening formed through an upper surface of the manifold cavity" as detailed at page 7 of the brief.

Appellant states:

"The Examiner suggests that it would be obvious to modify the device of Itsudo, to connect the reactive gas supply line of Sivaramakrishnam to the inert gas supply opening of Itsudo. However, the photon assisted CVD system of Itsudo [et al] is specifically designed to prevent reactant gases from migrating outside of the reaction chamber because of the "big problem in [that] the quantity of light fell." As is clearly evident in the above discussion, Itsudo expressly teaches away from the combination being proposed by the Examiner by describing having reactant gases outside the reaction chamber as a "big problem".

In response, the Examiner draws immediate attention to Appellant's broadly claimed "processing gas comprises reactive gases". The sole reference in Appellant's specification for such a description is "A processing gas flows through a gas supply line 320 into a manifold cavity 322." As such, the specification provides no guidance as to what Appellant believes can, or should be construed, as a "processing gas comprises reactive gases". The Examiner has rebutted Appellant's arguments on this point in numerous responses to arguments. See, for example, pages 14-15 of the final rejection of May 14, 2007 which states:

"In response, Appellant's arguments hinge on what process chemicals/materials are considered *reactive* and what process chemicals/materials are considered *inert.* See appellant's repeated consideration of reactivity and inertness above. Along the very lines of argument Appellant proposes, the criteria for obviousness is measured by the intended use of the inert gas being injected into the light source chamber of Itsudo which is specific to the *intended use* or application (process) of which Itsudo desires to carry out with his apparatus. Specifically, Itsudo's apparatus *is not limited* to the disclosed processes which fix what materials *react* and what materials are *inert.* Specifically, Itsudo is not limited to *using* his apparatus in processes which employ "inert" gas injection into Itsudo's manifold (9; Figure 6). The Examiner believes that in the very large collection of physical (spectral and thermal absorption) and chemical properties (the gases functional groups and chemical signature) of the very large number of gasses, only one gas need be *inert* in Itsudo's manifold (9; Figure 6) *and reactive* in Itsudo's processing chamber (1; Figure 6) to meet the intended use. As yet another degree of freedom, Itsudo illustrates independent spectral and thermal control in both volumes – 11 in volume 9 and 7 in volume 1 further allowing a gas to enter in an *inert state* in chamber 9 and enter a *reactive state* in chamber 1. Based on the Examiner's illustration of the large collection of physical (spectral and thermal absorption) and chemical properties (the gases functional groups and chemical signature) of the very large number of gasses, the Examiner has demonstrated operability of Itsudo's apparatus and thereby debunks Applicant's contention that the Examiner's proposed combination would render the Itsudo apparatus inoperable.

"

Further, Applicant's claimed "processing gas comprises reactive gases" is a term of art that can refer to either a reactive or nonreactive gas used in the apparatus "processing" of semiconductors. The reactivity of the processing gas depends on the chemical identity of the article to be processed which is not considered to be part of the apparatus. That a gas, reactive or inert, is used in a process[1], one of ordinary skill in the art would consider such a gas as a "process gas". Both an inert gas and a reactive gas have functions in semiconductor processing. Because of their functions in the process, they are considered by the prior art at "process gases". Further, it is well established that claim terms are issued their "plain meaning" according to MPEP 2111.01: Claim terms are presumed to have the ordinary and customary meanings attributed to them by those of ordinary skill in the art. Sunrace Roots Enter. Co. v. SRAM Corp., 336 F.3d 1298, 1302, 67 USPQ2d 1438, 1441 (Fed. Cir. 2003); Brookhill-Wilk 1, LLC v. Intuitive Surgical, Inc., 334 F.3d 1294, 1298 67 USPQ2d 1132, 1136 (Fed. Cir. 2003).

Applicant further states:

"As discussed in detail in paragraph [0002] of Itsudo, the photon assisted CVD system is designed to have the reaction chamber and light source room 9 divided by the perforated glass plate 8 **in order to prevent reactant gases from soiling (depositing) on the light-transmission aperture and light source lamp 11 front face** located in the light source room 9. The reason for this particular configuration is explicitly stated as being because "there was a big problem in [that] the quantity of light fell." Thus, the purging of the inert gas through the perforated plate of Itsudo is specifically used to prevent soiling of the light-transmission aperture and light source lamp 11 that would otherwise result from being in contact with reactant gases. Therefore, the

[1] Process – *noun* 2.b. a series of actions or operations conducing to an end; especially : a continuous operation or

inert (or purge) gas opening 12 is deliberately placed in the light source room 9 to preserve the quality of light produced and efficiency of the apparatus.

”

Applicant specifically claims “process gases comprises reactive gases”. In response, there are processes in which some of Itsudo’s injection gases are not photochemically active at the applied wave length of light used by Itsudo’s lamp but are nonetheless reactive with the chemical properties of Itsudo’s substrate (2; Figure 6) as in combination light/dark CVD processes. Applicant thus believes that a “process gas” should only be construed to be a reactive gas. As the Examiner noted above, Appellant’s specification as originally filed does not provide such a guidance. And, even if Appellant’s specification specifically defined a “process gas” to only be a reactive gas, such a redefinition would not be consistent with a reasonably broad reading of the claims or the prior art’s lexicography. The Examiner, by applying a reasonably broad reading of the claims, services Appellant’s interests by not issuing claims that may be construed by others to infringe on similar apparatus simply by what type of gas the apparatus is using in the particular process.

Appellant further states at page 10:

“The Examiner suggests that it would be obvious to modify the device of Itsudo, to connect the reactive gas supply line of Sivaramakrishnam to the inert gas supply opening of Itsudo. However, the photon assisted CVD system of Itsudo is specifically designed to prevent reactant gases from migrating outside of the reaction chamber because of the "big problem in [that] the quantity of light fell." As is clearly evident in the above discussion, Itsudo expressly teaches

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treatment especially in manufacture. http://www.merriam-webster.com/dictionary/process

away from the combination being proposed by the Examiner by describing having reactant gases outside the reaction chamber as a "big problem".

And at page 14:

"The Examiner suggests that it would be obvious to modify the device of Itsudo, to connect the reactive gas supply line of Sivaramakrishnam to the inert gas supply opening of Itsudo. However, contrary to the Examiner's assertion, such a modification would change the principal mode of operation of Itsudo, because there would be no purging of inert gas through the perforated plate 8 in order to prevent the "big problem" of depositing a soiled layer on the light source 11 and the associated reduced quality of light emitted from the source 11."

In response, the Examiner notes that the Examiner's *precisely stated* grounds for the combination is that "it would have been … to add Sivaramakrishnam's gas supplies and for Itsudo to optimize the relative location of his processing gas supply line opening." As such, the Examiner is not proposing "connecting the reactive gas supply line of Sivaramakrishnam to the inert gas supply opening of Itsudo". Such a suggestion fails to meet the claimed requirement that "a gas supply line connected via a processing gas supply line opening formed through an upper surface of the manifold cavity". Further, as iterated numerous times above and in prior actions, Appellant's arguments are based on distinguishing "reactant gas" and "inert gas" of the prior art; however, Appellant's do not reconcile the fact that no such claimed distinction is made in the pending apparatus claims. Appellant claims "processing gas", which the prior art in general, and a

reasonably broad reading of the claims would find to encompass *all* gases used in the process either inert or reactive.

Appellant states at page 10:

"On page 16 of the Final Office Action mailed May 14, 2007 the Examiner states "In response to appellant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references." M.P.E.P. § 2145(IV). However, Appellant respectfully points out that "A [single] prior art reference that "teaches away" from the claimed invention is a significant factor to be considered in determining obviousness; however, "the nature of the teaching is highly relevant and must be weighted in substance." M.P.E.P. § 2145(X)(D)(1), citing In re Gurly, 27 F.3d 551,554, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994).

Accordingly, Appellant respectfully submits that where Itsudo "teaches away" from the proposed combination by describing the effects of it as a "big problem" that according to M.P.E.P. § 2145(X)(D)(1) the relevancy of this teaching be weighed in substance for how it discourages the claimed invention. The teachings of Itsudo and Sivaramakrishnam are directed toward…"

And at page 13…

"The proposed modification of Itsudo would change the principal mode of operation of Itsudo.

"If the proposed modification or combination of the prior art would change the principal mode of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious." M.P.E.P § 2143.01(VI), citing In re Ratti, 270 F2d 810, 123 USPQ 349 (CCPA 1959). The Examiner stated on page 13 of the Final Office Action mailed May 14, 2007 that "in resolving the level of ordinary skill in the art, the Examiner

believes it would ... to add Sivaramakrishnam's gas supplies and for Itsudo to optimize the relative location of his processing gas supply line opening." Thus, the issue is whether the Examiner's proposed modification of Itsudo would change the principal mode of operation of Itsudo."

And at pages 14-16…

"Appellant respectfully submits that the suggested combination of references and modification of Itsudo would therefore require a substantial reconstruction and redesign of the apparatus of Itsudo to avoid the detrimental effects of the reduced quality of emitted light, as well as change the basic principal under which the construction of the photon assisted CVD system of Itsudo was designed to operate. Accordingly, Appellant respectfully submits that because the proposed modification of Itsudo would change the principal mode of operation, that there is no teaching, suggestion, or motivation to combine the references…"

In response, the Examiner asserts that Appellant's position specifically hinges on *how* Itsudo's apparatus is used. If a narrow reading of Appellant's pending apparatus claims is considered, and the lexicography of the prior art is disregarded, then the "reactive gas" definition Appellant would like to affix to the claimed "process gas" would still not remove Itsudo as a reference for teaching such because such a recasting of standard art-accepted lexicography would be based on the *intended use* of Itsudo's apparatus. In particular, a "reactant gas" as provided by Sivaramakrishnam injected "through an upper surface of the manifold cavity" would not be antithetical to Itsudo's goal of preventing the upper wall (8; Figure 6) from deterioration based on the fact that *if* the injected process gas is photochemically reactive to the wavelength of

Itsudo's lamp, then Itsudo, and those of ordinary skill in the art, would simply know well enough to conduct a batch / semi-batch operation as follows:

1. Itsudo's lamp is turned off.

2. Photochemically reactive gas is pulse injected (on/off) in Itsudo's manifold (9; Figure 6)

3. An inert gas blanket is injected from Itsudo's source pipe 12 forcing all Photochemically reactive gas into Itsudo's reaction space (1; Figure 6).

4. Itsudo's lamp is turned on and the same photochemical process intended by Itsudo is carried out with the same results as intended.

Alternatively, yet another photochemical process can be processed by Itsudo that would thus render the pending claim anticipated:

1. Itsudo's lamp is turned on.

2. Nonphotochemically active gas is pulse injected (on/off) in Itsudo's manifold (9; Figure 6)

3. The nonphotochemically active gas reacts with Itsudo's wafer 2; Figure 6

4. Itsudo's lamp is turned off.

5. An inert gas blanket is injected from Itsudo's source pipe 12 forcing all photochemically reactive gas into Itsudo's reaction space (1; Figure 6).

6. Itsudo's lamp is turned on and the same photochemical process intended by Itsudo is carried out with the same results as intended.

The Examiner believes that such intended uses of the Itsudo apparatus illustrates the fact that the Examiner's combination does not disregard the teachings of either Itsudo or Sivaramakrishnam. Absent the disagreement between what is or is not a "process gas", this is because the Examiner believes that Applicant's stated differences amount to arguments based on intended use of

Appellant's pending apparatus claims. Itsudo's apparatus, if used as above, and in many other possible permutations thereof, would thus meet the use requirements argued by Appellant if "process gases" are indeed presumed to be all "reactive". Such a process conducted by Itsudo would thus not "change the principal mode of operation of Itsudo" as argued by Appellant.

Appellant further states at page 17:

"It is Appellant's understanding that the Examiner purports that modifying Itsudo to add Sivaramakrishnam's reactive processing gas supply line to the inert gas opening 12 of Itsudo is taught, suggested, or motivated by

(i) a teaching, suggestion, or motivation found in the knowledge generally available to one of ordinary skill in the art "to optimize the relative location of [Itsudo's] processing gas supply line opening," (see page 13 of the Final Office Action mailed may 14, 207)

(ii) a teaching, suggestion, or motivation found in the knowledge generally available to one of ordinary skill in the art "to use process gas sources as precursors for operations," (see page 14 of the Final Office Action mailed may 14, 207) and

(iii) a teaching, suggestion, or motivation found in Itsudo "to optimize desired process gas flows." (see page 14 of the Final Office Action mailed may 14, 207)

However, Appellant respectfully submits that all three assertions are overly broad in the instant application.

"With respect to items (i) and (iii) above, the Examiner notes that the singular impetus of Itsudo is to influence processing irregularities by controlling the *special* distribution of "process gases".

See Itsudo's purpose, constitution, and machine translation[2]. Specifically, Itsudo's upper wall (8; Figure 6) is detailed in 6 and 8 as providing Applicant's claimed "processing gas supply openings (10; Figure 6, 8) being nonuniformly (Figure 8) distributed over the upper wall (8; Figure 6)". As a result, all of Itsudo's purpose, constitution, and machine translation provide close parity to Appellant's own stated benefits:

"The invention relates to wafer processing apparatus having a chamber with an upper wall with gas supply openings formed therein which promote more even processing of a wafer." (Appellant's abstract)

"According to another aspect of the invention the gas supply openings are nonuniformily distributed over the upper wall so that the gas, after leaving the gas supply openings, create a flow pattern that promotes even processing over the upper surface of the wafer." Appellant's specification section [0009] etc.

With respect to item (ii) above, the Examiner's stated grounds of rejection are not conflicting with Itsudo's and Sivaramakrishnam's disclosure. In particular, Sivaramakrishnam's plural "process gases" are used to produce films of desired qualities as taught by Sivaramakrishnam (column 1; lines 50-61; column 2; lines 38-44).

Appellant states at page 18:

"First, as discussed above in Section A and Sections B(1) and B(2), and discussed further in Section (C) the purported modification does not "optimize the relative location of the *processing gas* supply opening." Itsudo expressly teaches away from such a configuration, and in fact such a

[2] The Examiner requested an expedited STIC certified translation on Sunday, February 17, 2008. Once filled and scanned, the Examiner will forward a copy to Applicant.

modification of Itsudo would have detrimental effects to the operation of the device rather than optimize operation of the device.0“

In response, the Examiner disagrees because Appellant’s finer point of what should and should not be considered a “processing gas comprises reactive gases” is central to the above argument. Such reactivity if a function of Itsudo’s employed lamp wavelength, the physical properties of process gases used, and the claimed “reactivity” of the gas with the chemical reactivity of Itsudo’s wafer (2; Figure 6). The Examiner believes that Itsudo’s inert gas injection source at 12, Figure 6 is a “processing gas”, however, the location of Itsudo’s inert gas injection source at 12, Figure 6 is not believed to be at the claimed “formed through an upper surface of the manifold cavity”. For this reason, and only this reason, the Examiner applies the teachings of Sivaramakrishnam’s disclosure. The proposed modification would not be detrimental to the disclosure of Itsudo for the above stated reasons set forth by the Examiner above.

Appellant states at page 21:

"A. Gas identity is considered a structural limitation, and the prior art fails to teach the elements of gas identity claimed by Appellant.

The Examiner stated on page 11 of the Final Office Action mailed May 14, 2007 that "gas identity is not considered a structural limitation in the pending apparatus claims. Further it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter, 618 F.2d at 769,205 USPQ at 409; MPEP 2106)."

and .. (page 22)

"However, contrary to the Examiner's assertion, Appellant respectfully submits that gas identity is considered a structural limitation in the pending apparatus claims. For example claim 29 requires "*the processing gas comprises reactive gases used for processing the wafer.*" In the recited limitation the portion "*the processing gas comprises reactive gases*" is indeed a structural limitation, while the phrase "used for processing the wafer' could be interpreted as a functional description of the reactive gases. To be more specific, a gas is considered reactive if it contains a structural group that is understood in the art as being reactive. One of ordinary skill in the art would understand that reactive gases decompose and/or react to form a layer on the wafer in the processes chamber, whereas non-reactive gases do not contain such a functional group."

And… (page 22)

"Additionally, the limitation of claims 40 and 42 that the "processing gas in the manifold cavity comprises non-depleted reactive gases" is also a structural limitation. In these claims the

depleted and non-depleted process gas compositions are structurally distinguishable from each other based on composition"

In response, the Examiner cannot disagree more with Appellant's position. Gas identity, function, and any other similar intended use clauses in *apparatus* claims are not considered structural features that distinguish from the prior art's structural features. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey,152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

Further, Appellant's attempt to accord "functional description" for the claimed "used for processing" is misplaced. Functional descriptive material, in apparatus claims, is normally associated with computers and controllers. See MPEP 2106.01. There are no computers or controllers claimed or disclosed in Applicant's specification.

Appellant states at page 23:

"B. Substituting reactive processing gases for inert gases is unsuitable for the intended use of the device of Itsudo.

The Examiner stated on page 11 of the Final Office Action mailed May 14, 2007 that "If the prior art structure is capable of performing the indented use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458,459 (CCPA 1963); MPEP2111.02."

In response, as stated above, the Examiner notes that the Examiner's *precisely stated* grounds for the combination is that "it would have been … to add Sivaramakrishnam's gas supplies and for Itsudo to optimize the relative location of his processing gas supply line opening." As such, the Examiner is not proposing "Substituting reactive processing gases for inert gases". Such a suggestion fails to meet the claimed requirement that "a gas supply line connected via a processing gas supply line opening formed through an upper surface of the manifold cavity". Further, as iterated numerous times above and in prior actions, Appellant's arguments are based on distinguishing "reactant gas" and "inert gas" of the prior art, however, Appellant does not reconcile the fact that the claimed reactivity is the reactivity with the gas and the claimed "wafer". The article to be processed is not considered part of the claimed apparatus, and neither is the article's reactivity. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter, 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

Appellant states at page 24:

"Itsudo uses inert gas to specifically keep out and exclude reactive processing gases from the light source room 9, which is the intended use that the substitution material must satisfy to establish obviousness. Therefore, substituting reactive processing gases for inert gases is

unsuitable for the intended use of excluding reactive processing gases from the light source room 9. Accordingly, the § 103(a) rejection is improper and fails to clearly define the intended use of the material to be replaced."

However, Appellant's claims and specification do not distinguish between reactive gases and inert gases when referring to "processing gases". Further, as demonstrated above, Itsudo's apparatus can perform the intended use in the manner suggested by the Examiner. When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

Appellant states at page 24:

"The Examiner goes on to posit that "only one gas need to be inert in Itsudo's manifold (9; Figure 6) and reactive in Itsudo's processing chamber (1; Figure 6) to meet the intended use." However, such an assertion is contrary to what is claimed by Appellant. Appellant claims "a processing gas supply line connected to the manifold component for providing a processing gas into the manifold cavity, wherein the processing gas comprises reactive gases used for processing the wafer." It is clear from the claim language that the processing gases are reactive gases irrespective of whether the processing gases react in the manifold cavity. If Appellant had intended otherwise, then Appellant would have claimed that the processing gas comprises inert gases."

In response, the Examiner's above quoted position is directly pertinent to both Appellant's claimed invention and Itsudo's disclosure. As noted repeatedly above by the Examiner, Appellant's claimed "reactivity" of the "process gas" is only with reference to the "process gas" as a first reactant and the claimed "wafer" as the second reactant "for processing the wafer". As such, the claimed reactive "process gas" is only reactive *if* the claimed wafer's chemistry and the process conditions of pressure, temperature, etc. favor a reaction forming product. In fact, radiation sources such as that of Itsudo's "light source 11" of sufficient power and wavelength can in fact heterolytically cleave even the strong covalent bonds of the noble gases. Such a photochemical reaction produces radicals that would necessarily "react" with any material wafer in Itsudo's reactor.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Rudy Zervigon/

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